Volunteer Lake Assessment Program Individual Lake Reports

PEMIGEWASSET LAKE, MEREDITH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	3,328	**Max. Depth (m):**	8.8	**Flushing Rate (yr^{-1}):**	2.8
Surface Area (Ac.):	241	**Mean Depth (m):**	2.4	**P Retention Coef:**	0.61
Shore Length (m):	6,100	**Volume (m^3):**	2,329,500	**Elevation (ft):**	559

TROPHIC CLASSIFICATION

Year	Trophic class
1980	MESOTROPHIC
1993	MESOTROPHIC

KNOWN EXOTIC SPECIES

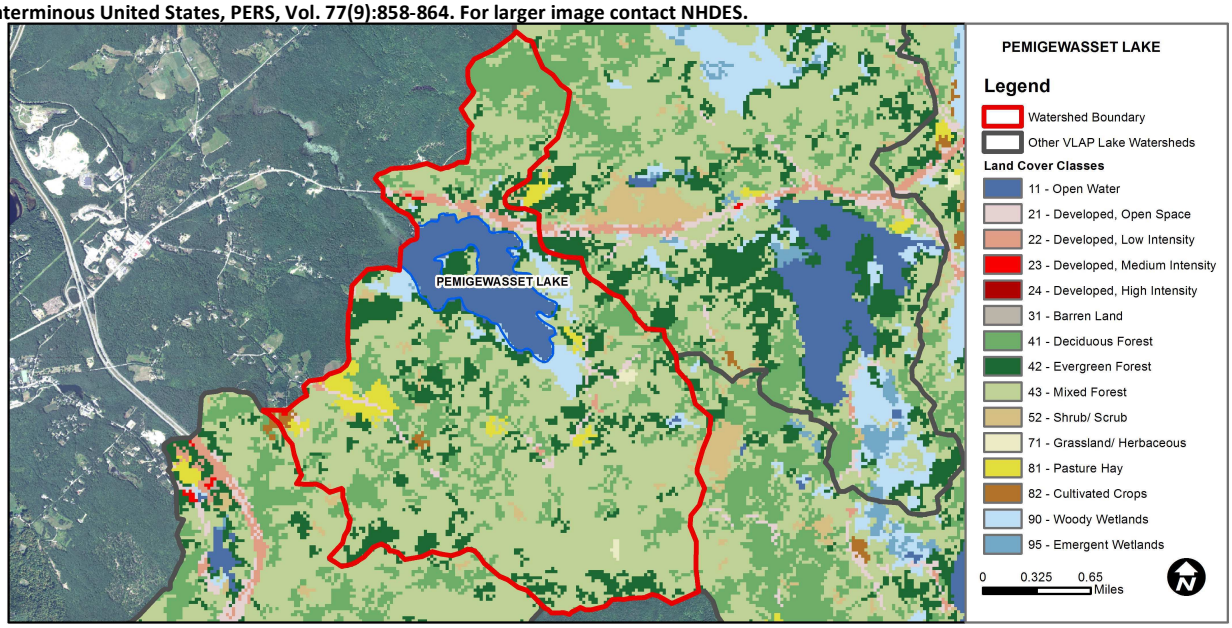
Variable Milfoil

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Encouraging	< 10 samples and no exceedance of criteria. More data needed.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.08	Barren Land	0	Grassland/Herbaceous	0.25
Developed-Open Space	1.36	Deciduous Forest	15.75	Pasture Hay	2.13
Developed-Low Intensity	0.81	Evergreen Forest	13.15	Cultivated Crops	0.28
Developed-Medium Intensity	0.08	Mixed Forest	53.88	Woody Wetlands	3.29
Developed-High Intensity	0	Shrub-Scrub	0.94	Emergent Wetlands	0.03

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
PEMIGEWASSET LAKE, MEREDITH, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were approximately equal to 2011 and slightly greater than the NH lake median value.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were slightly greater than NH lake median values. Hypolimnetic (lower water layer) conductivity was slightly greater than other stations due to organic compounds released from the sediments.
- **E. COLI:** E. coli levels were much less than state standards for public beaches and surface waters.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and metalimnetic (middle water layer) phosphorus levels were low and consistent with historical data. Hypolimnetic phosphorus was elevated and the turbidity was also elevated indicating either bottom sediment contamination or the release of organic compounds from sediments under anoxic conditions.
- **TRANSPARENCY:** Transparency improved slightly from 2011 and was greater than the NH lake median.
- **TURBIDITY:** Hypolimnetic turbidity was elevated either from bottom sediment contamination or the release of organic compounds from the sediments. Metalimnetic turbidity was slightly elevated likely due to a layer of algae present at that depth.
- **PH:** pH levels were lower than desirable in the metalimnion and hypolimnion.
- **RECOMMENDED ACTIONS:** Increase monitoring frequency to three times per summer to better assess summer water quality and historical trends.

Dissolved Oxygen & Temperature Profile

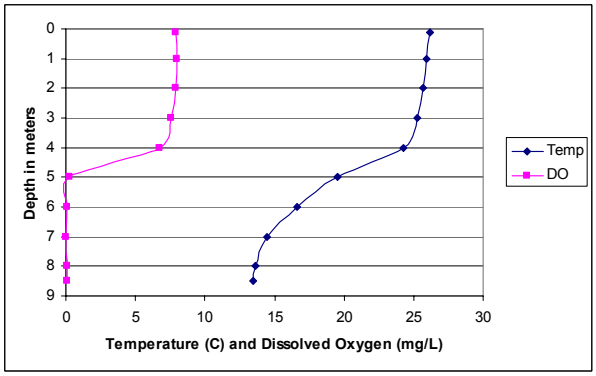


Table 1. 2012 Average Water Quality Data for PEMIGEWASSET LAKE

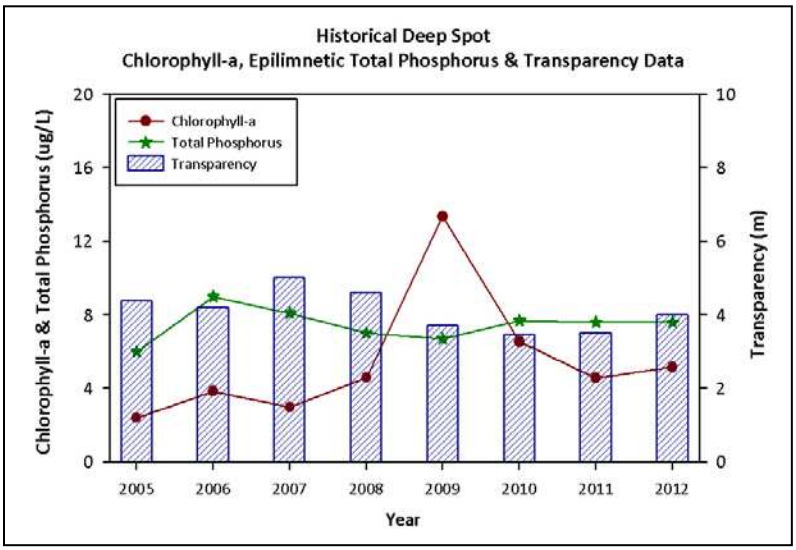
Station Name	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	VS		
Boat Launch				45.4	10	6			0.64	6.64
Deep Epilimnion	4.6	5.16	6	45.5		8	4.00	4.75	1.12	6.66
Deep Metalimnion				47.6		9			2.15	6.09
Deep Hypolimnion				60.8		24			12.15	6.23
Inlet 2			6	46.1		6			1.14	6.68
Outlet			6	45.8	10	9			0.95	6.64
Smoke Rise Cove				47.2	50	6			0.86	6.54

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	N/A	Ten years of consecutive data necessary for trend analysis.
Transparency	N/A	Ten years of consecutive data necessary for trend analysis.
Phosphorus (epilimnion)	N/A	Ten years of consecutive data necessary for trend analysis.



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